Adult salmon... Continued

escapements. This action item proposes that responsible agencies (1) review existing biological information and (2) implement the two-year amendment procedures for modifying the Framework Plan to protect San Joaquin stock separately if feasible alternatives are available.

d. Law enforcement effort should be elevated during October through December to curb poaching losses in the designated salmon spawning areas of the San Joaquin drainage.

The Department of Fish and Game is reviewing planned work schedules of adjoining unit staff and has recently filled the Modesto Warden position. Six new Warden positions have been established in the Delta through the use of mitigation funds and additional effort in the Old River and Middle River area may be helpful if Action Item 1.b. is implemented. Despite budget constraints a priority should be placed on protection of spawning runs and habitats through 1996. A de-briefing at the end of each season should be completed to make necessary refinements.

e. Recognizing the limits of existing funding and staffing, agencies involved should pursue options for redirection or additional staffing, operating and overtime funding to increase law enforcement efforts in the spawning area from late October through December during each of the next five years.

Similar to the expanded enforcement effort in the Delta to reduce poaching losses, funding from the Delta Pumps Fish Protection Agreement or other sources could be pursued to increase enforcement effort on the San Joaquin spawning and nursery areas. A range of options including overtime funds and additional personnel should be considered.

f. Responsible agencies could develop an information document requesting voluntary assistance of the various constituent groups in activating Stream-Watch networks.

Pertinent information on reporting violations, the population status and the activities underway to restore San Joaquin drainage runs could be dispersed. Sportsmen clubs and landowners have developed Fisheries Watch Networks to help protect habitats and fisheries in their area. A public relations effort to increase the involvement of these groups could be very helpful.

Adult salmon... Continued

g. Increase the incentives for reporting violations.

Clubs should be encouraged to make CalTip contributions as conservation projects to stimulate reporting and improve the effectiveness of protecting salmon in the spawning areas. County Fine Committees may also provide funding for this purpose. A bumper sticker campaign may help encourage participation.

h. Explain the importance of protecting fall-run salmon in the San Joaquin drainage.

Joint press releases by participating parties, public relations articles in the San Joaquin Valley newspapers, Outdoor California, Western Water, agricultural newsletters or other publications could be helpful and many people would be interested. Descriptions of the voluntary actions taken by the SJRMP participants to restore this salmon stock should be published and widely distributed. Discussions on public radio and television stations could be beneficial.

This action item not only increases the base of understanding in the local and not-so-local areas but also provides an excellent public relations opportunity for those entities participating in the various action items. Greater public support may be the key to decisions on contentious action items. Thus, effective public relations may be a necessary precursor to implementing other action items.

2. **Upstream migration of adult salmon** Low dissolved oxygen, high water temperatures and a lack of attraction flows of San Joaquin River drainage origin appear to cause blockage or delays and straying during fall migrations upstream. The following actions have the potential to stimulate more timely and successful upstream migrations of adult salmon to their natal spawning areas:

a. Improve instream flows in the Merced, Tuolumne and Stanislaus and San Joaquin rivers.

Voluntary land fallowing programs, efficiency improvements, temporary water sales, purchase of water rights or lands with water rights, exchanges/transfers through the use of the State Water Bank or other arrangements, and implementation of the recent Tuolumne River Agreement should all be considered as alternatives to augment instream flows.

Upstream migration... Continued

Water Bank sales are underway on the Stanislaus (50 TAF) and Merced rivers (15 TAF) this fall. Interim benefits to instream uses in these river and the San Joaquin River can occur when economic incentives for water right holders are available. There appear to be many innovative ways to improve instream flows on an interim basis. Responsible agencies and water right holders could proactively pursue such measures, consistent with the Governor's new Water Policy. The U.S. Bureau of Reclamation's Friant EIS, the San Joaquin River Basin Resources Management Initiative, CVP reform legislation or other federal actions may also lead to improvements in instream flows.

Accelerating planning studies for additional offstream storage and conjunctive use programs with emphasis on improvement of salmon habitat could be encouraged. Efforts underway by the U.S. Bureau of Reclamation on Montgomery Reservoir in the Merced River drainage is one example.

b. Develop and implement measures that provide adequate water temperature within the designated spawning areas by mid-October each year.

It is the position of the fishery management agencies that optimum spawning and incubation temperature where no salmon egg mortality occurs (due to temperature alone) is between 42-56°F. While there is agreement that salmon do have certain temperature tolerances and that the egg stage is probably the most sensitive a few parties continue to express reservations with (1) the basis for this recommendations, (2) whether these recommendations will become hard goals or just objectives to strive for, and (3) whether reservoir releases for temperature protection purposes would be subject to some test of reasonableness. All of these concerns are issues to be determined through more formal administrative and sometimes legal processes and are beyond the scope of this Plan. The Regional Water Quality Control Board or the State Water Resources Control Board may provide appropriate forums for resolution.

In the interim a temperature objective of 42-56°F should be used as a target throughout the designated spawning reach on each tributary. Special water operations using this objective were implemented on the Stanislaus River in 1991 and 1992 with the cooperation of the U.S. Bureau of Reclamation, Oakdale and South San Joaquin Irrigation Districts and the Tri-Dam Project.

Upstream migration... Continued

c. Install the upper Old River Barrier each fall to improve guidance flows and water quality for fish migrating upstream through the San Joaquin Delta.

The installation of this barrier in the fall by the Department of Water Resource has been used to improve habitat conditions for upstream migrants when necessary. Rip-rap is placed in the head of Old River to increase the proportion flow that continues down the San Joaquin River to the Stockton Turning Basin area. Low dissolved oxygen has persisted there in dryer years despite reductions in cannery wastes and tertiary treatment of Stockton waste water. This fall barrier at Old River continues to be the primary measure used to alleviate the dissolved oxygen "sag" which can block adult salmon migrations at concentrations less than 5.0 parts per million. Stockton is proceeding with water quality and wastewater reclamation studies which may eventually result in eliminating a portion of their discharge to the San Joaquin River. Dissolved oxygen levels of 2.0 parts per million or less were recorded near Stockton in October, 1992 during the normal salmon migration period. An interim solution is sorely needed.

With improved Delta modelling capabilities and detailed water quality information it is possible that a model could be built, validated and calibrated to assist in selection of better management options to avoid or mitigate this problem. The combination of a complete barrier at Old River, operation of the aeration device at Rough and Ready Island, and additional streamflows (ref. Vernalis) should be evaluated for use in dry or critical years to increase attraction flows and help reduce the dissolved oxygen "sag" near Stockton. Tidal stage and both State and Federal water project operations also influence this area.

All features of the 1969 Four Agency Memorandum of Understanding (MOU) could be implemented to remedy the dissolved oxygen problems in the lower San Joaquin River until such time as the above studies result in a more effective solution, or until the State Water Resources Control Board issues Interim or New Delta standards or objectives that remedy the problem. The 1969 MOU provides for the release of additional Federal water supplies upstream of Vernalis to help improve the dissolved oxygen near Stockton.

d. Evaluate and establish conditions on dredging of the Stockton Turning Basin that help avoid dissolved oxygen levels below 6.0 parts per million during salmon migration periods.